

Appl. No. 09/927,244
Amdt. dated March 2, 2004
Amendment under 37 CFR 1.116 Expedited Procedure
Examining Group

PATENT

REMARKS/ARGUMENTS

Claims 1-7 remain pending in the instant application. Claim 1 has been amended.

Embodiments in accordance with the present invention relate to corrosion resistant coatings on components of semiconductor fabrication tools, and in particular to rare earth-containing coatings formed over a separate adhesion layer that in turn overlies a parent material such as a ceramic. As described throughout the specification, the adhesion layer may be formed by implantation. (See, for example, page 12, lines 11-25).

Accordingly, claim 1 has been amended to recite:

1. A substrate processing chamber having at least one component bearing a rare earth-containing coating bound to a parent material by an intervening implanted oxide adhesion layer, such that the component exhibits resistance to etching in a plasma environment. (Emphasis added)

In the latest office action, the Examiner issued final rejection of the pending claims as either anticipated or obvious in light of U.S. patent no. 6,139,983 to Ohashi et al. ("the Ohashi patent"). These claim rejections are traversed as follows.

As a threshold matter, the Examiner is reminded that pending claims 1-3 and 7 stand rejected as anticipated, and not merely obvious, in light of the Ohashi patent:

[t]he distinction between rejections based on 35 U.S.C. 102 and those based on 35 U.S.C. 103 should be kept in mind. Under the former, the claim is anticipated by the reference. No question of obviousness is present. In other words, for anticipation under 35 U.S.C. 102, the reference must teach every aspect of the claimed invention either explicitly or impliedly. Any feature not directly taught must be inherently present. (Emphasis added; MPEP 706.02)

Like the instant application, the Ohashi patent relates to formation of corrosion-resistant coatings on ceramic semiconductor fabrication equipment. Unlike the pending claims, however, the Ohashi patent teaches formation of the corrosion resistant coating during a sintering process to create the ceramic member:

In the sintering of aluminum nitride, a sintering aid such as yttria or the like may be added in order to promote the sintering process and raise a thermal conductivity and a mechanical strength of the resulting sintered body. After the

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completion of the sintering, a great amount of such a sintering aid is existent in the grain boundary phase of the aluminum nitride grains. (Emphasis added; col. 3, lines 4-10)

The Ohashi patent specifically describes introduction of rare earth material into a ceramic powder through mixing:

In the preparation step, the powdery aluminum nitride raw material is dispersed into the solvent, to which may be added the compound of the rare earth element and/or the alkaline earth element in the form of oxide powder or solution. The mixing may be carried out by simple stirring, but if it is required to pulverize aggregates in the powdery raw material, a mixing and pulverizing machine such as pot mill, trommel, attrition mill or the like may be used. (Emphasis added; col. 5, lines 31-38)

By contrast, independent claim 1 has now been amended to recite an implanted rare earth oxide layer. Nowhere does the Ohashi patent teach or even suggest, formation of such an implanted adhesion layer.

Because the Ohashi patent relied upon by the Examiner fails to disclose or even suggest every element of the pending claims, it is respectfully asserted that the claims are neither anticipated nor obvious in view of this reference. Any continued rejection of the claims as anticipated based on this reference is improper, and the rejections should be withdrawn.

The Examiner also rejected claims 1-3 and 7 as anticipated by U.S. patent no. 6,432,256 to Raoux et al. ("the Raoux patent"). Claims 4-6 have been rejected as obvious based upon the Raoux patent in combination with the Ohashi patent.

Like the instant application, the Raoux patent relates to methods for forming corrosion-resistant coatings for components of semiconductor fabrication tools. Unlike the pending claims, however, the Raoux patent describes only the formation of corrosion resistant rare earth:fluoride coatings:

the ceramic parts are implanted with rare-earth ions using an implantation technique based on a metal vapor vacuum arc (MEVVA™) ion source. The implanted ions are then reacted with fluorine radicals in a highly corrosive environment to form a layer of rare-earth fluoride material, RE:F₃, at the surface of the ceramic component. (Emphasis added; Abstract)

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Nowhere does the Raoux patent teach, or even suggest, a rare earth-containing oxide intervening between a corrosion-resistant coating and an underlying parent material, to promote adhesion.

Moreover, the Examiner cannot combine the Raoux patent with the Ohashi patent to provide such a teaching. Specifically, the Examiner has cited the Raoux patent as prior art under 35 U.S.C. 102(e).

However, 35 U.S.C. 103(c) precludes any obviousness rejection from being based upon commonly owned 102(e) prior art. Accordingly, attached hereto please find a copy of the recorded assignment of the Raoux patent to Applied Materials, Inc.

Based upon the status of the Raoux patent as prior art under 35 U.S.C. 102(e), and common ownership between this patent and the instant application, it is understood that this reference is not eligible to serve as a basis for an obviousness rejection of the pending claims. The Examiner's rejection of the claims based upon the combination of the Raoux and Ohashi patents is thus improper, and should be withdrawn.

In view of the above amendments and remarks, it is respectfully asserted that pending claims 1-7 are now in condition for allowance. The instant response is being submitted within the two month period required to provoke an advisory action, and reexamination of the pending claims and prompt issuance of a notice of allowance is respectfully requested. If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 650-326-2400.

Respectfully submitted,



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